

REMARKS

Applicant thanks the Examiner for carefully considering the present application. Please reconsider the present application in view of the above amendments and the following remarks.

Disposition of Claims

Claims 1-3 and 9-29 were pending in the present application. Claims 27-29 have been canceled. Thus, claims 1-3 and 9-26 are now pending in the present application. Claims 1-3 are independent claims. Claims 9-14 and 27 depend from claim 1, claims 15-20 and 28 depend from claim 2, and claims 21-26 and 29 depend from claim 3.

Amendments to the Claims

Claims 1-3 have been amended by way of this reply. Claims 27-29 have been canceled. Claims 1-3 have been amended to incorporate the limitations of now canceled claims 27-29. Because claims 27-29 were previously considered, no new search is necessitated by the amendments. No new matter has been added by the amendments.

Rejections Under 35 U.S.C. § 102

Claims 1-3, 9, 13, 15, 19, 21, 25, and 27-29 of the present application were rejected under U.S.C. § 102 (e) as being anticipated by U.S. Patent No. 6,968,099 ("Chen"). Claims 27-29 were canceled, and the limitations thereof were incorporated into claims 1-3. To the extent that the rejection may apply to the amended claims, this rejection is respectfully traversed.

Claims 1-3, as amended, require, in part, that "the driving member is operable to actuate the single movable reflection member in a first direction perpendicular to an optical path, and a second direction perpendicular to the optical path and the first direction." This limitation was included in canceled claims 27-29.

The driving member of the claimed invention actuates the single movable reflection member in a first direction perpendicular to the optical path, and a second direction perpendicular to the optical path and the first direction. For example, in Fig. 6, referring to the left-right direction as the horizontal direction, and the direction into/out of the paper as the vertical direction, the driving member is operable to actuate the movable type reflection member 5a in the vertical direction and the horizontal direction. If an error is generated in one of the optical paths, the driving member can actuate the movable type reflection member 5a vertically downwards to escape the plane containing the optical path, and can actuate the movable type reflection member 5a horizontally such that it is moved below a position that lines up with the optical path, and then actuate the movable type reflection member 5a upwards. Thus, while the movable type reflection member 5a is being actuated horizontally to the desired optical path, the movable type reflection member 5a is below the plane containing the optical path, and thus do not interrupt the other optical paths.

The Examiner asserts that the above limitations that were previously in claims 27-29 are disclosed by Figs. 5-7 of Chen, which "teaches the upward and downward state of the device." However, the upward and downward direction taught by Chen only satisfies one direction. That is, the above limitations require not only movement of the member 61 in the first direction perpendicular to the optical path as shown in Figs. 5-7, but also, movement of the member 61 in a

second direction that is perpendicular to the optical path and the first direction. Chen clearly fails to disclose movement in a second direction *that is perpendicular to the optical path and the first direction*, as required by the claims.

In view of the above, claims 1-3 are patentable over Chen, at least for the above reasons. Claims 9, 13, 15, 19, 21, and 25 are dependent from claims 1-3. Thus, claims 9, 13, 15, 19, 21, and 25 are patentable over Chen, for at least the same reasons as claims 1-3. Accordingly, withdrawal of this rejection is respectfully requested.

Rejections Under 35 U.S.C. § 103

Claims 10, 11, 14, 16, 17, 20, 22, 23, and 26 of the present application were rejected under U.S.C. § 103 (a) as being unpatentable over Chen in view of U.S. Patent Application Publication No. 2002/0196999 ("Kim"). This rejection is respectfully traversed.

As explained above, claims 1-3 are patentable over Chen. Kim fails to provide that which Hill lacks with respect to these claims. Kim teaches spheres that can be selectively pivoted or rotated to align the input module with an output module. Kim teaches "push rods 90 that are positioned at equal intervals around the circumference of an annular flange 74. Each push rod 90 comprises a composite beam that is moved by a composite motor 92. The motors are supported by a pair of brackets 96, 98 that are mounted to a base 100 to which the faceplate 76 is also secured. Upon application of the driving signal to the composite motors 92, a force is created on the push rods 90 that cause the push rods 90 to press in varying degrees against the annular flange 74. Movement of the flange 74 causes the orientation of the sphere 72 within the conical section 78 of the faceplate 76 to be changed, thereby changing the orientation of the optical module 70 in the

optical switch.” Kim further discloses that stepper motors with lead screws can be used to gimbal the optical module in order to change the orientation of a sphere or other frame in which the module is placed. (See paragraphs [0027] and [0031] of Kim)

Contrary to the claimed invention, Kim does not show or suggest using a movable reflection member. In fact, Kim discloses that “conventional deflection-based optical switches often have high signal losses and require expensive packaging or costly labor-intensive alignment.” Thus, Kim actually teaches away from such a feature. Because Kim fails to show or suggest using a movable reflection member, Kim also fails to show or suggest a driving member operable to actuate the single movable reflection member in a first direction perpendicular to an optical path, and a second direction perpendicular to the optical path and the first direction, as required by the claims.

The Examiner asserts that Kim discloses the additional limitations of claims 10, 16, and 22, stating that Kim teaches “means for moving the movable reflective means is step motors.” However, as explained above, Kim only teaches step motors that change the orientation of a sphere or other frame in which the module is placed, and not for actuating a single movable reflection member in a first direction perpendicular to an optical path, and a second direction perpendicular to the optical path and the first direction, as in the claimed invention.

In view of the above, claims 1-3 are patentable over Chen and Kim, whether considered separately or in combination, for at least for the above reasons. Claims 10, 11, 14, 16, 17, 20, 22, 23, and 26 are dependent from claims 1-3. Thus, claims 10, 11, 14, 16, 17, 20, 22, 23, and 26 are patentable over Hill, for at least the same reasons as claims 1-3. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 12, 18, and 24 of the present application were rejected under U.S.C. § 103 (a) as being unpatentable over Chen in view of U.S. Patent No. 6,647,173 ("Chen '173"). This rejection is respectfully traversed.

As explained above, claims 1-3 are patentable over Chen. Chen '173 fails to supply that which Chen lacks with respect to these claims. Chen '173 teaches an optical switch having a mirror 21 that is moveable in an arc from a position out of an optical path to a position within the optical path from the two I/O ports 10, 50 to the prism 22. Chen '173 fails to show or suggest a driving member operable to actuate the single movable reflection member in a first direction perpendicular to an optical path, and a second direction perpendicular to the optical path and the first direction, as required by the claims.

In view of the above, claims 1-3 are patentable over Chen and Chen '173, whether considered separately or in combination, at least for the above reasons. Claims 12, 18, and 24 are dependent from claims 1-3. Thus, claims 12, 18, and 24 are patentable over Chen and Chen '173, for at least the same reasons as claims 1-3. Accordingly, withdrawal of this rejection is respectfully requested.

Conclusion

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account No. 50-0591, under Order No. 15115/153001 from which the undersigned is authorized to draw.

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Respectfully submitted,

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